REMARKS

Claims 1-6, 11-20, 25-35, 38, and 74-108 are pending in the application. Claims 16-20, 25-35 and 38 are withdrawn as being drawn to non-elected inventions. By this amendment, claims 1 and 6 have been amended, new claims 74-108 have been added, and claims 7-10, 21-24, 36-37, and 39-73 have been canceled without prejudice or disclaimer. Claims 1-15 are under active consideration.

Claim 1 has been amended to recite "[a] composition, comprising a cell encoded with a detectable label, wherein the detectable label comprises a semiconductor nanocrystal that is localized in the cytoplasm, nucleus, or an organelle of the cell." Support for the amendment can be found in the specification, for example, at page 20, lines 3-10; and page 35, lines 5-9. Accordingly, the specification provides adequate support for the amendment.

Claim 6 has been amended to recite "[t]he composition of claim 1, wherein the detectable label further comprises one or more encoding species selected from the group consisting of a semiconductor nanocrystal (SCNC), a fluorosphere, a nanobar, a light scattering particle, an organic fluorescent species, and a microsphere comprising an SCNC" Support for the amendment can be found in the specification, for example, at page 21, lines 23-24; pages 23-27; and page 52, lines 3-5). Accordingly, the specification provides adequate support for the amendment.

Support for new claims 74-108 can be found throughout the specification, and in particular, for claims 74-78, at page 7, lines 1-7; page 44, lines 10-11; page 45, lines 23-27; page 46, lines 3-5 and lines 14-24; page 73, lines 23-25; page 74, lines 5-8; and Example 1; for claim 79, at page 46, lines 3-6; page 47, lines 19-27; page 50, lines 10-12; and page 51, lines 3-6; for claims 80-95, at pages 68-69; and for claims 96-108, at page 35, lines 2-4; page 77; and Example 4.

Cancellation and amendment of the claims is made without prejudice, without intent to abandon any originally claimed subject matter, and without intent to acquiesce in any rejection of record. Applicants expressly reserve the right to file one or more continuing applications hereof containing the canceled or unamended claims.

Restriction Requirement

Applicants affirm the election without traverse of Group I, which corresponds to claims 1-15, drawn to cells comprising semiconductor nanocrystals. Applicants submit that newly added claims 74-108 are drawn to substantially the same invention, but are of a different scope, and should be considered together with the claims of Group I currently under examination.

Rejoinder

Applicants request that claims 16-20, 25-35 and 38, drawn to methods of distinguishably identifying a cell by labeling with a semiconductor nanocrystal, be rejoined, per the Commissioner's Notice in the Official Gazette of March 26, 1996, entitled "Guidance on Treatment of Product and Process Claims in light of In re Ochiai, In re Brouwer and 35 U.S.C. § 103(b)" which sets forth the rules, upon allowance of product claims, for rejoinder of process claims covering the same scope of products. Applicants request that claims 16-20, 25-35 and 38 be rejoined and examined upon allowance of any of the claims of Group I drawn to a cell encoded with a detectable label comprising a semiconductor nanocrystal.

Objection the Specification

The specification is objected to as allegedly "failing to provide proper antecedent basis for the claimed subject matter," particularly with respect to the terms extracellular and intracellular semiconductor nanocrystal (Office Action, page 2). As explained below, the specification provides proper antecedent basis for semiconductor nanocrystals localized extracellularly or intracellularly. See the specification, for example, at page 20, lines 3-10; and page 35, lines 5-9; page 41, lines 1-2; page 72, lines 5-7; and page 74, lines 7-12. Therefore, withdrawal of the objection to the specification is respectfully requested.

Rejection under 35 U.S.C. § 112, second paragraph

Claims 8 and 9 are rejected under 35 U.S.C. § 112, second paragraph as allegedly being "indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention" (Office Action, page 2). In particular, the Office Action alleges that "[c]laims 8 and 9 are indefinite for reciting an intracellular semiconductor

nanocrystal and an extracellular semiconductor nanocrystal respectively. Because the specification fails to describe what an intracellular and extracellular semiconductor nanocrystal are, these claims are indefinite since these are not well-known in the art" (Office Action, page 2). Claims 8 and 9 have been canceled; therefore, the rejection with respect to these claims is moot. However, cancellation of these claims was made without prejudice and without intent to acquiesce in the rejection. By reciting an "intracellular semiconductor nanocrystal" or "extracellular semiconductor nanocrystal", Applicants intended that the claimed semiconductor nanocrystal is localized intracellularly or extracellularly, respectively. Claim 1, as currently amended, and new claims 81, 82, 97, and 98 similarly recite limitations regarding the localization of semiconductor nanocrystals.

Claim 1 recites a semiconductor nanocrystal that is "localized in the cytoplasm, nucleus, or an organelle of the cell." New claims 81 and 97 recite that "the detectable label is localized intracellularly." New claims 82 and 98 recite that "the detectable label is localized extracellularly." Support for the amendment to claim 1 and addition of new claims 81, 82, 97, and 98 can be found in the specification, for example, at page 20, lines 3-10; and page 35, lines 5-9.

For at least these reasons, withdrawal of the rejection under 35 U.S.C. § 112, second paragraph is respectfully requested.

Rejections under 35 U.S.C. § 102

Claims 1, 2, 4-7, and 10-15 have been rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by the reference of Guillem (U.S. Patent No. 6,194,213). In particular, the Office Action alleges that Guillem teaches "a human T lymphocyte cell labeled at the membrane with functionalized nanocrystals comprised CdSe/ZnS (core/shell) or multilabeled with nanocrystals and a fluorescent. The nanocrystals are semiconductor nanocrystals comprising a CdSe core and a ZnS shell and may further comprise a dopant (fluorescence property) such as rare earth metal or a transitional metal." (Office Action, page 3.)

In addition, claims 1-3, 6, 7, and 10-14 are rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by the reference of Bawendi et al. (U.S. Patent No. 6,306,610). In particular, the Office Action alleges that Bawendi et al. teach "a composition comprising fluorescent

semiconductor nanocrystals associated to a molecule such as cells, prokaryotic or eukaryotic. The semiconductor nanocrystals comprise a CdSe core and a ZnS shell. The composition is also associated with cell membranes." (Office action, page 3.)

Claims 7-10 have been canceled; therefore, the rejection with respect to these claims is moot. Applicants respectfully traverse the rejections under 35 U.S.C. § 102(e) on the following grounds.

For a reference to anticipate claimed subject matter under 35 U.S.C. § 102, "the reference must teach every aspect of the claimed invention either explicitly or implicitly." M.P.E.P. § 706.02. Applicants respectfully submit that the references of Guillem and Bawendi et al. do not teach all aspects of the Applicants' invention as now claimed, either explicitly or implicitly.

Claims 1-6 and 11-15 of the instant application are drawn to compositions comprising cells encoded with semiconductor nanocrystals localized in the cytoplasm, nucleus, or an organelle of the cell. Guillem teaches cells that have their plasma membranes labeled with lipophilic semiconductor nanocrystals. The nanocrystals described by Guillem are coated with a lipophilic capping compound to allow incorporation into lipid membranes. Guillem fails to teach any method for labeling cells with semiconductor nanocrystals in the cytoplasm, nucleus, or a subcellular organelle as taught in the instant application. Therefore, claims 2, 4-7, and 11-15 are not anticipated by the reference of Guillem.

The reference of Bawendi et al. also fails to disclose cells labeled intracellularly in the cytoplasm, nucleus, or an organelle. Bawendi et al. teach the use of semiconductor nanocrystals associated with a compound that has affinity for a biological target, including cells. However, Bawendi et al. fail to describe any method for translocating nanocrystals across the plasma membrane of an intact cell for the purpose of labeling cells in the cytoplasm, nucleus, or an organelle of the cell as taught in the instant application. Therefore, claims 1-3, 6, and 11-14 are not anticipated by the reference of Bawendi et al.

In addition, new claims 74-78 are drawn to compositions comprising cells, wherein the detectable label comprises a semiconductor nanocrystal conjugated to a translocatable molecule. Neither Guillem nor Bawendi et al. describe conjugation of semiconductor nanocrystals with translocatable molecules for the purpose of incorporation of semiconductor nanocrystals intracellularly. Therefore, new claims 74-78 are not anticipated by Guillem or Bawendi et al.

New claim 79 is drawn to a composition further comprising a porogen or liposome. Neither Guillem nor Bawendi et al. describe the use of porogens or liposomes for the purpose of incorporation of semiconductor nanocrystals intracellularly. Therefore, new claims 74-79 are not anticipated by Guillem or Bawendi et al.

New claims 80-95 are drawn to compositions comprising cells encoded with a detectable label comprising a semiconductor nanocrystal, wherein cells are immobilized on a chip. Neither Guillem nor Bawendi et al. describe immobilization of cells on any kind of solid support. Therefore, new claims 80-95 are not anticipated by Guillem or Bawendi et al.

New claims 96-108 are drawn to compositions comprising cells encoded with a detectable label, wherein the cells are transfected with DNA encoding a non-endogenous protein, and the detectable label comprises a semiconductor nanocrystal conjugated to a molecule that binds to the non-endogenous protein. Neither Guillem nor Bawendi et al. describe lableling cells with semiconductor nanocrystals conjugated to a molecule that binds to a non-endogenous protein. Therefore, new claims 96-108 are not anticipated by Guillem or Bawendi et al.

For at least these reasons, withdrawal of the rejections under 35 U.S.C. § 102(e) is respectfully requested.

CONCLUSION

In light of the above remarks, Applicants submit that the present application is fully in condition for allowance. Early notice to that effect is earnestly solicited.

If the Examiner contemplates other action, or if a telephone conference would expedite allowance of the claims, Applicants invite the Examiner to contact the undersigned.

The Commissioner is hereby authorized to charge any fees and credit any overpayment of fees which may be required under 37 C.F.R. §1.16, §1.17, or §1.21, to Deposit Account No. 18-1648.

Respectfully submitted,

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